

CLAIMS

1. A heat exchanger of a ventilating system comprising:

5 heat exchange plates laminated with regular intervals so that a first air passage through which indoor air being discharged to outside of a building passes and a second air passage through which outdoor air being introduced into the interior of the building passes are sequentially formed;

first corrugation plates attached to the first air passage and obtaining a space to allow outdoor air to pass therethrough; and

10 second corrugation plates attached to the second air passage and obtaining a space to allow outdoor air to pass therethrough,

wherein the heat exchange plates are made of a Korean paper material with numerous fine holes that are able to generate a capillary phenomenon and loess which radiates far infrared ray.

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2. The heat exchanger of claim 1, wherein the Korean paper is fabricated with bast fiber of the paper mulberry as a key component.

3. The heat exchanger of claim 2, wherein the Korean paper contains  
20 60~70% of holo cellulose, 10~20% of lignin and 5~10% of lime.

4. The heat exchanger of claim 2, wherein a process for fabricating the Korean paper comprises the steps of:

bundling the paper mulberry, putting it in a container with water, boiling it to a degree that its skin is easily peeled off, peeling and drying them;

soaking the dried skin of the paper mulberry in the water, sorting out only the bast fiber portion, putting the bast fiber portion in caustic soda and boiling it

5 more than three hours, and wringing it with a compressor; and

putting the moisture-removed bast fiber in a liquid, which has been prepared by mashing roots of the paper mulberry and pressing them out, and mixing them evenly, and filtering the resulting paper solution by using a sieve.

10 5. The heat exchanger of claim 1, wherein the loess has particles with a size of 0.02~0.05mm.

6. The heat exchanger of claim 5, wherein the loess has a composition ratio of 60~65% silica ( $\text{SiO}_2$ ), 10~13% alumina ( $\text{Al}_2\text{O}_3$ ), 5~6% iron content, 1~3%  
15 of magnesium, 2~3% of potassium carbonate, and 6~9% lime.

7. The heat exchanger of claim 1, wherein the first corrugation plate and the second corrugation plate are made of an aluminum material.

20 8. The heat exchanger of claim 1, wherein the first corrugation plate and the second corrugation plate are made of a paper material with numerous fine holes that are able to generate a capillary phenomenon and loess which radiates far infrared ray.

9. A heat exchanger of a ventilating system comprising:

heat exchange plates laminated with regular intervals so that a first air passage through which indoor air being discharged to outside of a building passes and a second air passage through which outdoor air being introduced into the

5 interior of the building passes are sequentially formed;

first corrugation plates attached to the first air passage and obtaining a space to allow outdoor air to pass therethrough; and

second corrugation plates attached to the second air passage and obtaining a space to allow outdoor air to pass therethrough,

10 wherein the heat exchange plates are made of a Korean paper with numerous fine holes that are able to generate a capillary phenomenon and charcoal which radiates negative ions.

10. The heat exchanger of claim 9, wherein the Korean paper is  
15 fabricated with bast fiber of the paper mulberry as a key component.

11. The heat exchanger of claim 10, wherein the Korean paper contains 60~70% of holo cellulose, 10~20% of lignin and 5~10% of lime.

20 12. The heat exchanger of claim 9, wherein the charcoal is fabricated by carbonizing a wood material at a temperature of 600~900°C and has carbon as a key component.

13. The heat exchanger of claim 12, wherein the charcoal contains carbon of some 85%.

14. The heat exchanger of claim 9, wherein the first corrugation plate  
5 and the second corrugation plate are made of an aluminum material.

15. The heat exchanger of claim 9, wherein the first corrugation plate  
and the second corrugation plate are fabricated with a Korean paper with  
numerous fine holes that are able to generate a capillary phenomenon and  
10 charcoal which radiates negative ions.

16. A heat exchanger of a ventilating system comprising:  
heat exchange plates laminated with regular intervals so that a first air  
passage through which indoor air being discharged to outside of a building passes  
15 and a second air passage through which outdoor air being introduced into the  
interior of the building passes are sequentially formed;

first corrugation plates attached to the first air passage and obtaining a  
space to allow outdoor air to pass therethrough; and

second corrugation plates attached to the second air passage and  
20 obtaining a space to allow outdoor air to pass therethrough,

wherein the heat exchange plates are made of a Korean paper with  
numerous fine holes that are able to generate a capillary phenomenon and active  
carbon that has an air cleaning function.

17. The heat exchanger of claim 16, wherein the Korean paper is fabricated with bast fiber of the paper mulberry as a key component.

18. The heat exchanger of claim 17, wherein the Korean paper contains  
5 60~70% of holo cellulose, 10~20% of lignin and 5~10% of lime.

19. The heat exchanger of claim 17, wherein a process for fabricating the Korean paper comprises the steps of:

bundling the paper mulberry, putting it in a container with water, boiling it  
10 to a degree that its skin is easily peeled off, peeling and drying them;

soaking the dried skin of the paper mulberry in the water, sorting out only the bast fiber portion, putting the bast fiber portion in caustic soda and boiling it more than three hours, and wringing it with a compressor; and

putting the moisture-removed bast fiber in a liquid, which has been  
15 prepared by mashing roots of the paper mulberry and pressing them out, and mixing them evenly, and filtering the resulting paper solution by using a sieve.

20. The heat exchanger of claim 16, wherein the active carbon is fabricated by processing wood or brown coal with chemicals such as zinc chloride  
20 or phosphoric acid, an activation agent and drying it, or by activating charcoal with steam.

21. The heat exchanger of claim 16, wherein the first corrugation plate

and the second corrugation plate are made of an aluminum material.

22. The heat exchanger of claim 16, wherein the first corrugation plate and the second corrugation plate are fabricated with a paper material with numerous fine holes that are able to generate a capillary phenomenon and active carbon which has an air cleaning function.